

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Siegfried F. Karg (et al.)      Examiner: Joel G. Horning  
Serial No.: 10/595,434      Group Art Unit: 1712  
Filed: April 19, 2006      Attorney Docket No: CH920030009US1  
Title: DEVICE AND METHOD FOR PATTERNING STRUCTURES ON A SUBSTRATE  
Confirmation: 9566

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Mail Stop Non-Fee Amendment  
Assistant Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION UNDER 37 C.F.R. §1.132**

I, Siegfried F. Karg, declare as follows:

- (1) I received a Ph.D. degree in physics from the University of Bayreuth (Germany) in 1994, in the area of solid-state and chemical physics.
- (2) I joined the International Business Machines Corporation (“IBM”) in 2000 as a research staff member of the organic electronics and display group developing organic light-emitting displays. Later, I was researching resistive switching in oxides for high-density memory applications. Most recently (2008), I joined nano-scale electronics group exploring semiconducting nanowires for post-CMOS technology. I have over 16 years in-depth experience in the physics of optics and electronics, light-induced chemical reactions and nano-scale physics, and I am highly respected by my colleagues as an expert in this field.
- (3) I am an inventor or co-inventor of about 29 issued patents (worldwide) including 13 US patents and an inventor or co-inventor of about 38 pending patent

applications (worldwide) including 18 patent applications currently pending in the United States Patent and Trademark Office.

(4) I am the first inventor of the above-identified patent application, and am intimately familiar with the invention disclosed and pending claims in this application. I am also familiar with the Office Action mailed July 12, 2010 for the above subject patent application. The Office Action rejected claim 10, among other rejections, under 35 U.S.C. §103(a) as being un-patentable over Yau et al. (Applied Physics Letters 57 (1990), No. 27, pp.2913-2915, "Yau") in view of Asahino et al. (Physical Review Letters 86 (2001) No. 19, pp. 4334-4337) in view of Jersch et al. (Applied Physics A 64 (1997), pp. 29-32, "Jersch").

(5) I have carefully reviewed the above prior art cited in rejecting claim 10 of the subject patent application. I believe, to my best knowledge, that Yau requires a specific laser wavelength (440nm) to ionize the TMA and uses an electrical field produced by a DC voltage applied between a conductive tip and a conductive substrate to guide the ions towards the substrate. Ions are formed only at this particular laser wavelength due to a multiphoton resonance (which directly excites the electronic states of a TMA molecule) which is different from surface Plasmon resonance which is specifically required by claim 10 of the subject patent application. Instead of electronic states of a molecule as in Yau, surface Plasmon resonance excites surface electromagnetic waves at the metal/dielectric interface. In the meantime, the electric field at the tip by the DC voltage (in Yau) is way below the threshold level for breaking chemical bonds to produce ions. Moreover, the method of Yau does not work without externally applied voltage or with an insulating substrate.

On the other hand, Jersch describes the enhancement of an electromagnetic laser radiation in the vicinity of a tip. The enhancement leads to high RF electrical and magnetic fields and Jersch then applies this enhanced RF field to create pits. However, the pits in Jersch are created through local heat and ponderomotive force, and not through surface Plasmon resonance which is specifically required by claim 10 of the subject patent application. Jersch neither teaches surface Plasmon resonance, nor teaches decomposing vapour into ions by applying surface Plasmon resonance.

In summary, neither Yau nor Jersch teaches surface Plasmon resonance nor teaches applying surface Plasmon resonance to decompose vapour into ions, which are specifically required by claim 10 of the subject patent application.

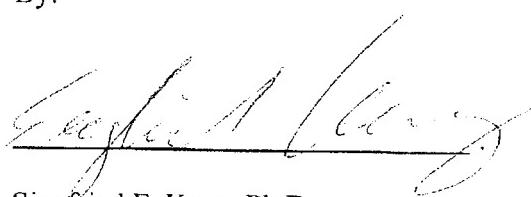
### DECLARATION

I declare that all statements made in this document of my own knowledge are true and that all statements made on information and belief are believed to be true and that these statements were made with the full knowledge that willful false statements so made are punishable by fine and imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the subject application or any patent issued on that application.

Date:

By:

24 November 2001



Siegfried F. Karg, Ph.D.